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The *Epimyrma* species of Corsica

(Hymenoptera, Formicidae)

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Abstract

Three species of the parasitic ant genus *Epimyrma* have been collected in the island of Corsica. The workerless *E. corsica* was described from there by one single female. *E. kraussei* and *E. ravouxii* are new for the island. Localities are indicated and some ecological and biological informations are given. The necessity for preservation of such localities is discussed.

Introduction

The ant genus *Epimyrma* Emery 1915 comprises about a dozen of described species, all of which are living as social parasites of *Leptothorax* species belonging to the subgenera *Myrafant* Smith 1950 or *Temnothorax* Mayr 1861. Several species are true slavemakers, others exhibit a degenerate dulosis, and one species is workerless, with a derived permanent parasitism (WINTER 1979; BUSCHINGER & WINTER 1982, 1983; WINTER & BUSCHINGER 1983).

Only one species was known to occur in the island of Corsica, *Epimyrma corsica* (Emery 1895). It was described by one dealate ♀. The life history of this species was studied in detail by BUSCHINGER & WINTER (1985).

During an excursion in March, 1982, which was mainly dedicated to the search for *E. corsica*, also two other species, *E. kraussei* Emery 1915 and *E. ravouxii* (André 1896) have been found. In the following I present the collecting data, together with some ecological and biological notes.

1. *Epimyrma corsica* (Emery 1895)

A total of 18 colonies were collected on March 28 and 30, in the Désert des Agriates, close to road no. D81 in the Col de Lavezzo, in about 420 m NN. The rocky area is covered by a not too dense macchia of 1-2 m height. The host species is *Leptothorax* (*Myrafant*) *exilis* Emery 1869. Colonies were found underneath of or between small flat stones lying on the ground. *E. corsica* is absolutely workerless, not only in the population of Corsica but as well in populations in the Adriatic coast of Yugoslavia (BUSCHINGER & WINTER, 1985). Several of the colonies proved newly infested by *Epimyrma* queens, since they were just about throttling the *Leptothorax* queens. Following our field and subsequent laboratory observations the young sexuals during late summer mate inside the mother nests. The young queens hibernate there, and leave the nest in search for own host colonies in early spring. Except from the two populations mentioned no other localities of *E. corsica* are known up till present.

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2. *Epimyrma kraussei* Emery 1915

Five colonies were found on March 25, 1982, about 2 km SE Venaco, near road no N193, in a terraced slope with sparse oak and olive trees about 600 m NN. Nests were located in the crevices of a dry wall in the shade of some large oak trees. The host species of *E. kraussei* is *Leptothorax (Temnothorax) recedens* (Nylander 1856). Two of the colonies were incipient ones with the dead or paralyzed host queen still present, one colony was containing an old *E.* queen and a young, not inseminated *E.* ♀. No *Epimyrma* ♂♂ were present, however, in laboratory culture four of the colonies later on produced up to 10 ♂♂.

E. kraussei is a degenerate slavemaker (BUSCHINGER & WINTER 1983), in that the few *E.* ♂♂ are still able to conduct slave-raids under laboratory conditions, however, the population data reveal that raids in the field are rare, and most colonies do not produce sufficient *E.* worker numbers for successful raiding. The reproductive biology resembles that of *E. corsica*, with sexuals mating in the mother nest, and young queens leaving for colony foundation after hibernation.

The range of *E. kraussei*, which originally was described from Sardinia, extends over a wide part of the mediterranean area, from Spain (ESPADALER & RESTREPO 1983) and North Africa (CAGNIANT 1969) to southern France, northern Italy (BARONI URBANI 1971, BUSCHINGER & WINTER 1983), and Yugoslavia (unpublished). Two other species, *E. vandeli* Santschi 1927 from southern France, and *E. foreli* Menozzi 1921 from South Italy, presumably represent but junior synonyms of *E. kraussei* (BUSCHINGER & WINTER 1982).

3. *Epimyrma ravouxi* (André 1896)

Three colonies were found on March 22, 1982, in an old pine forest about 1 km SW lake Marghese (Forêt de l'Ospedale, road no. D368), another 7 colonies on March 27, about 8 km E of the Col de Vergio, again in a SE-exposed pine forest (Forêt de Valdo-Niello) alongside road no. D84, both localities in elevations of 1000–1100 m NN. Rocks of up to several m diameter were scattered on the forest floor, and nests were found in crevices underneath of thin flags cracked off the rock surface. The host species was *Leptothorax (Myrafant) unifasciatus* (Latreille 1798).

At least 3 of the colonies were recently founded, one was still containing a paralyzed host queen, together with the *Epimyrma* queen. The invasion of new host colonies in this species begins in late August or September, after a mating flight. The throttling of the host colony queen may continue until the following spring (BUSCHINGER 1982).

E. ravouxi is a truly dulotic ant. Its slave raids were described by WINTER (1979). Four of the colonies from Corsica conducted slave raids, in the laboratory, which were by no means different from those observed with material from southern Germany. The range of *E. ravouxi* is quite large, extending from the Spanish Pyrenees (ESPADALER & RESTREPO 1983, BUSCHINGER unpubl.) through southern France (Nyons/Drôme, the type locality), northern Italy and Istria/Yugoslavia (BUSCHINGER, EHRHARDT & FISCHER 1981). It is the only *Epimyrma* species to be found north of the Alps, in Switzerland, southern Germany, and Austria (GÖSSWALD 1930, „*Epimyrma goesswaldi* Menozzi”; BUSCHINGER, EHRHARDT & FISCHER 1981; Faber in litt.). Contrary to all other known *Epimyrma* species, *E. ravouxi* is not restricted to one single host species. In the western parts of its range, *L. unifasciatus* seems to represent the only host species. In southern Germany, however, the colonies sometimes contain *L. nigriceps* Mayr 1855, either alone or together with *L. unifasciatus*. In Austria (Faber, in litt.), and in Yugoslavia, colonies quite frequently have *L. affinis* Mayr 1855 as slaves.

Discussion

The ant fauna of Corsica has been studied quite intensively (CASEVITZ-WEULERSSE 1974). Nevertheless it is still possible to find new species there (ESPADALER et al. 1984), or species which were not known before to occur in this island. The case of *Epimyrma* reported in this paper is of particular interest with regard to several aspects: As was shortly mentioned, *E. corsica* and *E. kraussei* sexuals mate in their mother nests. They do not fly, and the young queens disperse on foot, after dealation. This behavior raises questions on how and when the island could have been reached by these species from the mainland, or vice versa. An artificial introduction appears unlikely, since a socially parasitic ant is always depending on the presence of a dense population of its host species. Thus, the connections between the *Epimyrma* populations of Corsica and those from the mainland must be interrupted since a considerable time. The populations therefore could be very important in future studies e. g. of zoogeography or population genetics of this genus as well as of its evolution. The existence of several species with permanent inbreeding, thus quasi-clonal structure of local populations, very weak dispersion capacities and nevertheless wide ranges is highly remarkable, and it cannot yet be convincingly explained. For these reasons it is a necessity to document the localities where such rare and interesting ants do occur, and, moreover, to preserve the sites! Preservation of their near-natural habitats is not only the best means to preserve the ants themselves, but also numerous other, often rare or little-known invertebrates. The existence of socially parasitic ants is an indicator for long-term stable and undisturbed conditions (BUSCHINGER 1979).

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